

# ***Iteration #2 Results***

***Impact Assessment***

***STT Navigation Work Group***

STT Meeting – February 8, 2013  
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# Metrics/Evaluation Criteria

- Navigation impact assessment:
  - Considered thresholds that impact commercial navigation
  - Used input from Work Group and commercial navigation stakeholders

## Metrics/Evaluation Criteria

- Metrics Evaluated
  - Reservoir levels in Lake Roosevelt that adversely affect the Gifford Inchelium Ferry
  - Flows on the Lower Snake, Mid- and Lower Columbia Rivers that adversely affect commercial navigation operations
  - Flows that affect sediment deposition in the Columbia River estuary that potentially affects navigation (not included in 60% draft report)

## Metrics/Evaluation Criteria

- Locations Evaluated
  - Lake Roosevelt – Gifford Inchelium Ferry
  - Lower Snake River (flows at Lower Monumental and Ice Harbor dams)
  - Mid and Lower Columbia River (flows at Bonneville Dam)
  - Columbia River Estuary (sediment deposition dynamics)

## Overview of Analysis

- Analytical Approach
  - Develop key metrics (thresholds)
    - Reservoir levels for Lake Roosevelt
    - Flows for Snake and Columbia rivers
  - Review HYDSYM outputs and determine if and how frequently thresholds were met or exceeded
  - Analyze RC-CC, 2A-TC, 2A-TT, and 2B-TC
  - Preliminary results available for E1, E2B, E3 and E5

## Overview of Analysis

- High flow thresholds
  - Lower Snake River – flows greater than 100 KCFS cause barge operators to reduce tows from 4 barges to 2.
  - Mainstem Columbia River – flows greater than 450 KCFS at Bonneville:
    - Shallow draft channel - cause barge operators to reduce tows from 4 barges to 2.
    - Deep draft channel – delay up-bound traffic; cause ships in port to drag anchor

## Overview of Analysis

- Low flow thresholds
  - Mainstem Columbia – flows less than 120 KCFS at Bonneville indicate conditions typically requiring draft restrictions

## Analysis Results

### Lake Roosevelt Gifford Inchelium Ferry

Lake Roosevelt Ferry Average Outage Days/Month				
Month	RC-CC	2A-TC	2A-TT	2B-TC
January	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0
April	3.7	3.7	5.2	0.5
May	4.8	5.3	6.4	0.9
June	0.3	0.5	0.7	0.2
Totals	8.9	9.5	12.3	1.6

*Based on drafts below elevation of 1228 ft*



## Preliminary E-Results

### Lake Roosevelt Gifford Inchelium Ferry

Lake Roosevelt Ferry Average Outage Days/Month					
Month	RC-CC	E1	E2B	E3	E5
January	0.0	0.9	0.0	0.0	0.0
February	0.0	0.8	0.0	0.0	0.0
March	0.0	0.9	0.0	0.1	0.0
April	3.7	1.0	0.0	4.6	0.6
May	4.8	2.3	0.0	5.8	0.9
June	0.3	4.1	0.0	0.6	0.2
Totals	8.9	10.0	0.0	11.1	1.7

*Based on drafts below elevation of 1228 ft*

## Analysis Results

### Lower Snake River Barging

Ice Harbor Dam Average Days of Outflows in Excess of 100,000 cfs				
Month	RC-CC	2A-TC	2A-TT	2B-TC
April	6.6	6.6	6.6	6.7
May	13.8	13.8	13.7	15.5
June	14.0	14.0	14.0	14.6
July	0.3	0.3	0.3	0.3
Totals	34.7	34.6	34.5	37.1

## Preliminary E-Results

### Lower Snake River Barging

Ice Harbor Dam Average Days of Outflows in Excess of 100,000 cfs					
Month	RC-CC	E1	E2B	E3	E5
April	6.6	7.5	7.1	6.6	6.7
May	13.8	16.7	15.6	13.8	15.5
June	14.0	15.6	14.2	14.0	14.6
July	0.3	1.2	1.0	0.3	0.3
Totals	34.7	41.0	37.9	34.6	37.1

## Analysis Results

### Mid and Lower Columbia River - High Flows

Bonneville Dam Average Days of Peak Outflows of 450,000 cfs or Greater				
Month	RC-CC	2A-TC	2A-TT	2B-TC
March	0.1	0.1	0.1	0.1
April	0.3	0.4	0.4	0.4
May	1.1	1.0	1.0	1.3
June	2.2	2.3	2.4	3.9
July	0.1	0.1	0.0	0.1
Totals	3.9	3.9	3.9	5.7

## Preliminary E-Results

### Mid and Lower Columbia River - High Flows

Bonneville Dam Average Days of Peak Outflows of 450,000 cfs or Greater					
Month	RC-CC	E1	E2B	E3	E5
March	0.1	0.0	0.1	0.1	0.1
April	0.3	1.0	1.2	0.2	0.4
May	1.1	11.2	8.1	1.0	1.3
June	2.2	15.1	9.6	2.5	3.9
July	0.1	0.9	1.1	0.1	0.1
Totals	3.9	28.2	20.1	3.9	5.7

## Analysis Results

### Lower Columbia – Low Flows

Bonneville Dam Average Days of Outflows of 120,000 cfs or Less				
Month	RC-CC	2A-TC	2A-TT	2B-TC
August	4.5	4.4	11.5	4.4
September	21.7	21.6	25.3	21.8
October	24.9	25.2	22.8	25.3
November	11.5	11.7	10.5	11.7
December	4.3	4.4	7.0	4.4
Totals	67.0	67.4	77.2	67.5

## Preliminary E-Results

### Lower Columbia – Low Flows

Bonneville Dam Average Days of Outflows of 120,000 cfs or Less					
Month	RC-CC	E1	E2B	E3	E5
August	4.5	11.0	12.9	3.4	4.7
September	21.7	28.4	26.8	16.5	21.1
October	24.9	29.7	25.8	27.8	25.5
November	11.5	27.5	23.8	14.8	12.0
December	4.3	25.5	22.7	8.8	4.9
Totals	67.0	122.0	112.1	71.4	68.2

## Further Analysis

- Sediment effects – Lower Snake (awaiting stakeholder input)
- Sediment effects – Columbia Estuary (analysis on-going)
- River level effects on port operations – Columbia Estuary (awaiting stakeholder input)



## Summary

- Alternative 2B-TC has notably fewer Lake Roosevelt ferry outage days (lake is generally held higher than other alternatives.)
- No or negligible differences between alternatives with regard to effects on commercial navigation in the Lower Snake and Columbia.
- Awaiting metrics and analysis for Columbia estuary sediment effects.